

of the unit enabled them to increase their physical activity while staying in an area of modified protective isolation to protect their immunity. The nursing staff of the BMT unit took a physical fitness instructor approach to selected patients beginning with their admission. A formal contract was signed by the patients with an agreement to participate in the project. Physical activity goals were set with the BMT patients on admission and were then measured daily. The unit was marked off with indicators for measuring distance for those who chose to walk the hallways to increase their physical activity. Exercise bicycles were also available for use and time used was measured. Achieved goals were celebrated by the unit and prizes were given for overall patients who met their goals. Outcomes were measured against previous quarter Bone Marrow Transplant program data in which physical activity was suggested but without the special attention and extra encouragement that was given during the project. Positive correlations were measured between the increased physical activity and length of stay, deep vein thrombosis incidence, engraftment date, pneumonia incidence, bacteremia, fever, and complaints of insomnia. The results revealed a decrease in complaints of insomnia due to increased activity during the day and more sleep during the night. There was no incidence of pneumonia in these selected patients. More research is needed to validate findings and project is currently ongoing.

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MAKING A DIFFERENCE: DEVELOPMENT AND IMPLEMENTATION OF A POST-INSERTION CENTRAL LINE CARE BUNDLE IN HSCT PATIENTS

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Patients undergoing hematopoietic stem cell transplantation (HSCT) are at risk for multiple life-threatening complications during and following treatment, including catheter related bloodstream infections (CRBSIs). In 2009, we noted a hospital wide increase in CRBSIs. To address this concerning trend, our HSCT unit initiated a program to minimize this impact for our patients. We conducted an initial literature review that included gathering data from other similar care units. We developed and piloted two tracking tools to monitor compliance with the current dressing change, cap change, and implanted port needle change policies. After implementation, we selected the more useful of the two tools to move forward. Following our initial data collection, we initiated a new standard of care for HSCT patients on our unit and monitored compliance and CRBSIs for a proposed period of 12 months. To date (January-September 2010), we have had 2 documented CRBSIs in our inpatient population, that is far below the national average. This poster presentation will highlight the process we undertook to impact CRBSIs in our HSCT population, including tool development, our evidence-based dressing change procedure, and finally, nursing and patient education.

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EDUCATING PEDIATRIC OUTPATIENT NURSES TO THE UNIQUE CHALLENGES OF REDUCED INTENSITY TRANSPLANT CONDITIONING (RIC) REGIMEN IN CHILDREN WITH NON-MALIGNANT DISORDERS

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In recent years, many advances have been made in the field of hematopoietic stem cell transplantation, an important treatment option for children with certain malignant and non-malignant diseases. Unrelated umbilical cord blood (UCB) is a viable donor source for hematopoietic reconstitution for these patients due to its rich numbers of stem and progenitor cells, and its tolerance to HLA mismatches. Traditionally, the pediatric conditioning regimens have been myeloablative, which are associated with significant acute and long-term toxicities. Recently, RIC regimens have proven to provide sufficient immunosuppression to attain acceptable rates of

donor cell engraftment in patients with certain diseases. However, use of these regimens using cord blood donors has been challenging because of higher rates of graft failure. The PBMT program at Duke is testing a new transplant protocol for children with non-malignant diseases using UCB donors and slightly lower intensity chemotherapy that is more immunosuppressive.

The Duke RIC consists of alemtuzumab, hydroxyurea (HU), fludarabine (FLU), melphalan, and thiopeta. A portion of the conditioning therapy (alemtuzumab, HU and FLU) is completed in our outpatient day hospital. Clinic nurses are responsible for coordinating adequate staffing, educating patients and families, and administering alemtuzumab and FLU. Oral HU involves collaborating with mid-level providers for monitoring patient's blood counts and educating families if dose adjustments are needed. Although clinic nurses will have general knowledge of immunosuppression and potentially reactive medications, there are some unique challenges pertaining to reduced intensity transplant that require specific education.

We will highlight the key points related to outpatient nursing care of pediatric patients undergoing reduced intensity transplants at Duke University Hospital. This will include comprehensive education on medication administration and practice standards with a special focus on alemtuzumab safety as it applies to the pediatric patient in the clinic setting. Additionally we will review precautions for neutropenic and immunodeficient patients. Patient education will be designed to minimize potential side effects and to ensure patient safety. Following our presentation, nurses are expected to have a broader understanding of reduced intensity transplant, specific patient care needs, and family education pertinent to our reduced intensity protocol.

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IMPLEMENTING A BONE MARROW BIOPSY PERFORMANCE IMPROVEMENT PLAN: FOCUS ON EXCELLENCE

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Bone marrow biopsies and aspirates (BMBA) have traditionally been performed by Licensed Independent Practitioners. In 1994, two large academic centers in a Midwestern metropolitan city identified the need for registered nurses (RN) to help with BMBA. These academic centers cooperated and submitted the paperwork to the State Board of Nursing requesting the expansion of scope to allow specially trained RN's to perform BMBA. After the State Board approved this request, one of the academic centers implemented an RN run outpatient BMBA program. The program started with one RN and has expanded to six RN's who rotate through the biopsy center as well as administer chemotherapy. These RN's perform over 1500 BMBA annually. Over the past few years, the program has rapidly expanded leading to challenges offering opportunities for improvement. The Advanced Practice Nurse (APN) worked with the BMBA nursing team to embark on a project to evaluate BMBA and initiate process improvement (PI) as indicated. The APN presented a proposal to the physician team and the stem cell transplant QI committee. The proposal was accepted and welcomed by all. The PI group reviewed every aspect of BMBA and identified opportunities for improvement including; need for formal ongoing training regarding new testing and discussion sessions with pathology, flow and cytogenetic laboratories; improving the accuracy of orders for special testing written by the physician teams; identifying patient scheduling and coordination errors; and lack of standardized nursing pre procedure assessment. These challenges became more pronounced when training new staff to do BMBA. The second step has been to implement processes based on the opportunities including; the development of a pre procedure assessment consistent with national standards; a specific BMBA consent form; a patient survey to determine patient satisfaction with RN BMBA, an agreed upon revised order set that doubles as the lab requisition; an inservice for the RN's with the pathology department and scheduled rotations through the different labs as well as the implementation of an error reporting system. Outcomes thus far include; a decrease in the number of

complaints by the physician teams, improved touch preps as described by the pathologists, validated patient satisfaction and improved RN satisfaction. Formal outcomes are forthcoming as well as the proposal for a research study.

Table 1. Patient Satisfaction Survey Results

Survey Question	Outside Facility	Our Facility
Use of Anxiolytic Agents %	30%	53%
Average Pain Score	5.2	2
Felt Relaxed	30%	56%
Compare experience to outside facility	N/A	Better 60% The same: 19%

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STANDARDIZING CARE FOR CUTANEOUS aGVHD AND PERIRECTAL BREAKDOWN

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Background: Acute cutaneous graft versus host disease (aGVHD) is a potential complication for allogeneic transplant recipients. More than half of BMT recipients will be affected by aGVHD. Diarrhea associated with aGVHD of the GI tract and the high dose preparative regimen can result in perirectal skin breakdown. There are no published nursing standards of skin care for cutaneous aGVHD or perirectal skin breakdown. Nursing management and documentation is inconsistent due to the lack of a standardized protocol.

Purpose: The goal of this evidence-based practice project was to improve the care of BMT recipients with cutaneous aGVHD and perirectal skin breakdown. An education plan was implemented to improve the nurses knowledge and comfort in the management and documentation of skin care. The education plan consisted of the three components:

1. Review of cutaneous aGVHD and perirectal breakdown risk factors,
2. Documentation and assessment requirements,
3. Development and implementation of a standardized skin care protocol for cutaneous aGVHD and perirectal skin breakdown.

Interventions: A protocol for aGVHD and peri-rectal breakdown was developed and implemented. Nursing staff completed both a pre and post test knowledge assessment. In addition chart reviews were conducted before and after implementation of the standardized skin care protocol.

Evaluation: Results of the post-test showed that an education program combined with a standardized protocol for skin care improved nurses knowledge as well as the assessment and documentation of skin care.

Discussion: Education regarding skin care for aGVHD and perirectal breakdown and reinforcement of the use of the standardized protocol must be ongoing. Limitations of this project included the small number of cases of cutaneous aGVHD during the education period. An additional limitation is finding time for nursing staff during their busy assignments to receive education regarding the standardized skin care protocol.

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PROBLEMS AND NEEDS RELATED TO PHYSICAL AND PSYCHOSOCIAL REHABILITATION AT LONG-TERM FOLLOW-UP UNIT (LTFU) NURSING CONSULTATION FOR ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT) RECIPIENTS IN JAPAN

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Purpose: To clarify problems and needs related to physical and psychosocial recovery and rehabilitation after a discharge in allogeneic HSCT recipients.

Methods: A retrospective and descriptive study based on medical record information of single cancer institute in Japan. Subject was the

allo HSCT patients who visited LTFU nursing consultation in outpatient clinic between Apr 2009 and Mar 2010.

We examined various clinical information including patient background, stem cell source, conditioning, GVHD prophylaxis, and contents/correspondences at consultation. We simply tabulated and categorized all items qualitatively and inductively, and compare them according to the timing after allo-HSCT.

Results: Forty-nine patients (male 25/ female 24) who underwent allo-HSCT with myeloablative (n = 15) or reduced-intensity (n = 34) conditioning regimens visited LTFU nursing consultation once (n = 25), twice (n = 12), or 3-times or more (n = 12).

Timing of their visit was within 6 months (n = 42), 6-12 months (n = 15), 1-2 years (n = 24), or more than 2 years (n = 19) post-transplant.

Frequently reported problems and needs for rehabilitation after a discharge included "incorporate strategies to prevent infectious complications"; "control symptoms related to GVHD and late effects"; "promote recovery in social activities"; "enhance recovery of physical activities by exercise"; and "manage their anxiety". Problems were more variable in patients within 6 months after allo-HSCT than in those at 6 months or later. Our correspondences to the patients within 2 years after HSCT included "adjust daily life according to recovery of physical functions"; "promote a physical rehabilitation", and "expect changes in psychosomatic conditions", while those to the patients at 2 years or later included "acknowledge daily effort to chronic symptoms and highly acknowledge psychosomatic recovery".

Discussion: As the patients encounter many problems related to GVHD and immunodeficiency during the first 2 years after allo-HSCT, it is important to assess their psychosomatic changes adequately and to incorporate effective interventions into daily life.

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ICU UTILIZATION IN BMT – UPDATE ON A BMT ICU UTILIZATION PROJECT

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Transferring a BMT patient to the ICU is a complex and critical decision. The decision is challenging for patients and families, who view transplant as the last resort. They view themselves as "fighters" and are willing to accept significant risks. Consents outline the serious risks involved including life-threatening infections, bleeding, organ damage, and GVHD. The mortality risks of allogeneic transplant approach 50% in the first year.

It is equally difficult for BMT physicians to make decisions about the ICU, as they approach transplant using cutting edge technologies, the latest research and clinical trials in their effort to cure. Knowing the probabilities of survival, when considering ICU care for BMT patients, makes it critical for the medical team to provide clear communication and establish clear goals of care.

Communication in the ICU can become fragmented between medical teams, patients and families. The mixed messages and conflicting recommendations are confusing and stressful for patients and families. They need clear and consistent communication in order to make educated decisions regarding care. One consequence of poor communication is an over utilization of the ICU for non-beneficial care.

Appropriate resource utilization is critical with rising health care costs and the scarcity of ICU beds. Guidelines are needed for the appropriate transfer of BMT patients to the ICU.

Guidelines for appropriate use of the ICU for BMT patients were developed by our team 5 years ago based on a review of current literature, data on prognosis and to address our increase in ICU utilization. A process was outlined to improve communication between the teams, patients and families. The plan consists of joint rounds with the BMT and ICU team and scheduled meetings with the families every 2-3 days.

Our ICU length of stay has decreased by 50%. The percentage of ICU days to total days is now 3.4 down from 5.1. The total annual BMT ICU days decreased to 209 from 443. Based on the guidelines, of 36 patients sent to the ICU, 16 met criteria, 19 met criteria for limited ICU and 1 did not. Twenty-five of these 36 patients (69%) were discharged from the ICU. We are now analyzing the six month and one year survival of these patients.